

**E-Chem Sensor Model H10-12 HHR ClO<sub>2</sub> Smart Sensor**

Model H10-12 is a special high range Chlorine Dioxide sensor used for the monitoring of ClO<sub>2</sub> gas in applications where chlorine dioxide is used, typically for decontamination. This sensor has very high specificity to chlorine dioxide. It may be used in conjunction with ATI's Model D16 portable leak detector or Models D12 or F12 toxic gas transmitters. H10-12 sensors contain internal electronics and memory that control sensor bias and store calibration data, calibration history, and limited data log.

Chlorine Dioxide sensors operate by generating a small electrical current proportional to the partial pressure of chlorine dioxide gas in the surrounding air. The current is the result of the reduction of chlorine dioxide to chloride on the surface of an inert electrode, with a resulting signal that is linear with respect to chlorine dioxide concentration. The ClO<sub>2</sub>-HHR sensors are 3-electrode sensors.



The table below provides the operational and performance specifications for the H10-44 ClO<sub>2</sub> sensor. Contact ATI or your ATI local representative with questions regarding specific applications for this sensor.

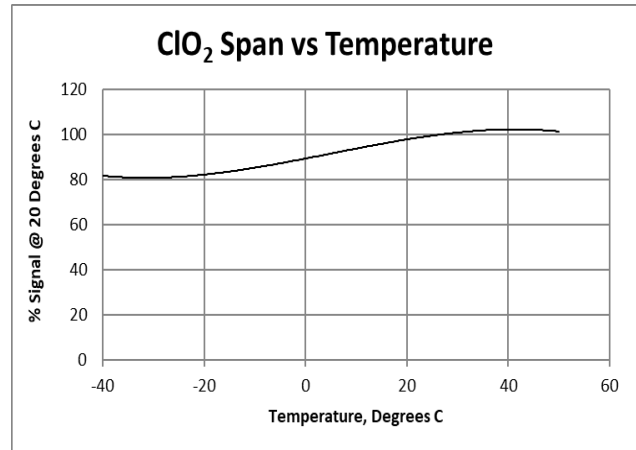
Primary Response	Volume % ClO <sub>2</sub>
Measuring Range	10 – 2000 PPM V/V (28.1–5,620 mg/m <sup>3</sup> )
Sensor Current	0.02 μA/PPM Nominal
Sensor Current Variability	0.005 – 0.04 μA/PPM
Linearity	± 1%
Response Time	T <sub>50</sub> = 20 Seconds, T <sub>90</sub> = 150 seconds
Temperature Range	-30° to +50° C
Memory	Internal e <sup>2</sup> memory for Calibration Data and Calibration History
Pressure Range:	- 5 to + 50 PSIG
Pressure Variability	Output proportional to ClO <sub>2</sub> partial pressure
Operating Humidity	0-99% RH Non-condensing (Intermittent) 20-95% RH Non-condensing (Continuous)
Zero Stability	± 1.0 PPM at constant temperature ± 2.0 PPM over ±10° C ambient temperature change
Span Drift	< 2%/Month
Temperature Effect on Span	See Graph
Operating Life	> 24 Months Typical in Clean Conditions
Storage Recommendation	Recommended maximum of 1 year for best sensor performance. Store at less than 25° C in a sealed container.
Size	1" D x 1.25" H (25 mm x 32 mm)
Weight	17 grams

**E-Chem Sensor Data**  
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H10-12 Chlorine Dioxide sensors exhibit response to certain other gases. When applying this sensor to specific applications, it is good practice to verify whether or not any of these potential interferences are present and might present interference issues. Note that cross-sensitivity data is approximate and based on exposures under 100 PPM. In some cases, response to other gases may not be stable or may be transient.

Electrochemical sensors exhibit a response that is temperature dependent to a limited extent. Although the effect of temperature is not large, it is useful to be aware of the effect. Shown below is a graph showing the effect on span of changing temperature.

Gas	Symbol	Response to 1 PPM
Chlorine	Cl <sub>2</sub>	0.4
Nitrogen Dioxide	NO <sub>2</sub>	0.2
Hydrogen Sulfide	H <sub>2</sub> S	-0.15
Methyl Mercaptan	CH <sub>3</sub> SH	-0.05
Ozone	O <sub>3</sub>	0.01
Hydrogen Cyanide	HCN	None
Ethanol (alcohol)	C <sub>2</sub> H <sub>6</sub> O	None
Ammonia	NH <sub>3</sub>	None
Carbon Monoxide	CO	None
Ethylene	C <sub>2</sub> H <sub>4</sub>	None
Hydrogen Chloride	HCl	None
Carbon Dioxide	CO <sub>2</sub>	None
Nitric Oxide	NO	None
Hydrogen Fluoride	HF	None



Shown below is a typical response time graph for a ClO<sub>2</sub> sensor. Note that this response time can become significantly slower at temperatures below -20°C.

